farm and home

POULTRY HUSBANDRY NO. 1

FACT SHEET

CLEANING SOILED EGGS

MILO H. SWANSON AND ROBERT W. BERG

Soiled eggs usually bring the equivalent of a "C" Grade price even though these eggs may be Grade "A" with respect to interior quality. This discrimination against the soiled egg is dictated by the housewife, who expects the eggs she buys to be just as sanitary and wholesome in appearance as any other food item at the super market. Producers, therefore, should make every effort to deliver only clean eggs, for it means extra money on every case.

Producing Nest-Clean Eggs

Good management of the laying house will minimize the egg cleaning problem. Eighty-five percent nest-clean eggs or better is not impossible, and the eggs which do need cleaning will be only lightly soiled. The following practices will help you achieve this goal:

1. Confine the flock to the laying house at all times. Birds with muddy feet will soil many eggs.

2. Keep the litter dry and in good condition. This requires an insulated house with adequate ventilation. Place part or all of the feeders and waterers over dropping pits to reduce litter soiling. Hydrated lime ($\frac{1}{2}$ to 1 lb. per 4 sq. ft.) will help keep litter dry.

3. Screen off the dropping pits and use a screened platform around water fountains.

4. Provide an adequate number of nests with deep, clean nesting material. One individual nest for each four or five birds is recommended. For the community nests, allow 5 to 6 sq. ft. of nesting space for each 100 sq. ft. of floor space. Brush the wire bottoms of roll-away nests and cages weekly to prevent wire-marking the eggs.

5. Locate the nests where the litter is the cleanest and driest. Birds will then enter the nests with a minimum of soil on their feet.

6. Discourage the birds from roosting in the nests at night.

7. Gather eggs frequently.

Hazards of Soiled Eggs

Soiled eggs are unattractive and unappetizing to the consumer. But, this is not the whole story. The soil on the shell is loaded with bacteria which can cause spoilage and off-flavors of the egg contents.

Consider these basic facts:

1. An average egg has about 7,500 tiny pores or openings in the shell. These pores make a gaseous exchange possible when the egg is used for hatching purposes.

2. Although bacteria on the shell surface tend to remain there, they can work their way through the pores into the interior of the egg when conditions are right.

3. Improper cleaning procedures often furnish the conditions and assistance needed for bacteria to penetrate the shell.

4. The greatest hazard from improperly cleaned eggs is bacterial spoilage. It is not the faster rate of moisture loss (increased air cell size) or the breakdown of thick white into thin.

5. Losses suffered by egg handlers through spoilage of improperly cleaned eggs is eventually reflected back to the producer in the form of lower prices.

Cleaning Methods

Even with the best laying house management there will be some soiled eggs. It is important then to select an egg cleaning method that will result in a clean-egg price and at the same time reduce the spoilage hazard referred to above. Labor efficiency will also be a factor.

Dry Cleaning

1. Hand buffing is satisfactory where volume of eggs is small. Labor efficiency is low.

2. Motor-driven abrasive wheels are available and are somewhat faster than hand buffing.

UNIVERSITY OF MINNESOTA

AGRICULTURAL EXTENSION SERVICE • U. S. DEPARTMENT OF AGRICULTURE

3. Dry cleaning machines using power operated abrasive belts are more efficient, especially when the producer wishes to machine-grade his eggs for size. The two pieces of equipment can be connected for a continuous operation. Frequently all eggs, nest-clean and soiled, are run through both machines for the sake of uniformity in appearance.

4. Because dry cleaning does not uniformly remove shell pigment, brown-shelled eggs which are heavily buffed, especially in the automatic belt-type machine, will have an unsatisfactory appearance.

5. In general, dry cleaning involves less risks from subsequent bacterial spoilage than any other method of removing soil from eggs.

Washing

1. Since bacteria are more mobile and active in liquid than on a dry surface, take special precautions in washing eggs to prevent bacterial contamination of the egg contents.

a.) Wash the eggs as soon after gathering as possible. Not only will the soil come off more easily, but the spoilage bacteria will have less time to work through the pores of the shell. Once the bacteria have penetrated the shell, no method of cleaning will be very effective in prolonging keeping quality.

b.) Maintain the temperature of the wash water at 110° to 120° F. A water temperature 10° to 20° F. higher than that of the eggs will cause the egg contents to expand and create a positive internal pressure which will discourage bacteria from entering through the shell pores. An egg washing machine equipped with a heating element and thermostatic control will do the best job in maintaining the optimum temperature. Check the water temperature frequently with a reliable thermometer. Beware of exceeding 120° F. in immersion-type washers, for too hot water will coagulate the egg white.

c.) Use a detergent-sanitizer especially designed for egg washing. The detergent portion of the compound will loosen the soil from the egg and the sanitizing agent will help control the troublesome bacteria. Household detergents are not recommended, as they have very little sanitizing action and often are perfumed. Use the quantity of detergent-sanitizer recommended by the manufacturer. Usually this will be $\frac{1}{2}$ oz. or 1 level tablespoon per gallon of wash water.

d.) Limit the time of the eggs in the wash water to not more than five minutes. Any soil on the eggs that the machine is capable of removing will be removed within 3 to 5 minutes. Prolonged washing invites trouble. Some sort of a timing device is helpful.

e.) Wash no more than five dozen eggs per gallon of washing solution (in immersion type washers). If this limit is exceeded, the eggs will not be properly cleaned and the bacterial count will not be held in check by the sanitizer. Determine the water capacity of your washer in gallons with a basket of eggs in place and multiply this figure by five. This will give you the maximum dozens of eggs you can safely wash before replacing the water with a fresh solution.

f.) If eggs are rinsed following washing, use warm water with detergent-sanitizer. The eggs will receive some protection while they are in market channels if a film of water containing the sanitizer is allowed to dry on the surface of the egg. Unless the wash water leaves some scum or soil on the eggs, it is not necessary to rinse them at all. But if a rinse is desirable, use water just as warm as or slightly warmer than the wash water and add $\frac{1}{2}$ oz. of detergent-sanitizer per gallon.

g.) Dry and cool eggs before casing. Dry the surface of the shell as quickly as possible. If eggs are packed wet, any living bacteria present would have an excellent chance of getting through the pores of the shell. A fan will dry and cool the eggs.

h.) Keep your equipment clean. After each use, empty the washer and thoroughly scrub it with fresh detergent-sanitizer solution. Dirty equipment can be an important source of trouble. Never hold the wash solution from one time to the next. Start each session with a fresh solution.

2. Washing eggs by hand can be a satisfactory method provided all the above principles are followed. For larger flocks, an egg washing machine will increase labor efficiency.

3. Spray-type washers have the advantage of only fresh washing solution coming in contact with the eggs. This type, however, is somewhat less efficient than the immersion washer unless the eggs are to be machine sized, in which case the spray-washer and machine grader can usually be operated as a continuous unit.

4. Immersion washers are popular because they save labor, have simple construction, and are relatively low-cost.

Summary

1. Producers should make every effort to gather as high a percentage of nest-clean eggs as possible. A little extra attention to laying house management will materially reduce time and labor spent cleaning eggs.

2. Use proper cleaning methods to reduce the possibility of bacteria contaminating the egg contents.

3. Anyone not following the rules for minimizing the risk involved in cleaning soiled eggs hurts himself and the poultry industry.

UNIVERSITY OF MINNESOTA, INSTITUTE OF AGRICULTURE,
ST. PAUL 1, MINNESOTA

Cooperative Extension work in Agriculture and Home Economics, University of Minnesota, Agricultural Extension Service and United States Department of Agriculture Cooperating, Skull Rutford, Director, Published in furtherance of Agricultural Extension Acts of May 8 and June 30, 1914.

3-59